

probe position detecting means for detecting a distance between the tip portion of the probe and a sample surface;

control means for controlling the distance between the tip portion and the sample surface;

scan means for two-dimensionally scanning the probe with respect to the sample surface;

a light source for generating light used to produce the light field;

a converging optical system for converging light radiated from the sample surface in response to the light field;

a two-dimensional image sensor for producing a two-dimensional shape image of the sample surface in real time; and

picture signal processing means for producing a two-dimensional light image in accordance with a signal intensity of a detection region in the two-dimensional shape image.

2. (Amended) A light probe microscope according to claim 1; further comprising a spectroscope interposed between the radiated light and the two-dimensional image sensor for selectively obtaining a light signal of a specified wavelength.

3. (Amended) A light probe microscope according to claim 1; wherein the converging optical system comprises a polarizer and a mirror arranged such that different polarization components of the radiated light form images in separate positions on the two-dimensional image sensor.

4. (Amended) A light probe microscope according to claim 1; wherein the converging optical system comprises a dichroic mirror and another mirror arranged such that different wavelength components of the radiated light form images in separate positions on the two-dimensional image sensor.

5. (Amended) A light probe microscope according to claim 1; wherein the picture signal processing means includes means for obtaining a signal intensity of a plurality of separate detection regions in the two-dimensional shape image and producing light images corresponding to the respective detection regions.

6. (Amended) A light probe microscope according to claim 2; wherein the picture signal processing means includes means for obtaining a signal intensity of a plurality of separate detection regions in the two-dimensional shape image and producing light images corresponding to the respective detection regions.

7. (Amended) A light probe microscope according to claim 3; wherein the picture signal processing means includes means for obtaining a signal intensity of a plurality of separate detection regions in the two-dimensional shape image and producing light images corresponding to the respective detection regions.

8. (Amended) A light probe microscope according to claim 4; wherein the picture signal processing means includes means for obtaining a signal intensity of a plurality of separate detection regions in the two-dimensional shape image and producing light images corresponding to the respective detection regions.

9. (Amended) A light probe microscope according to claim 1; wherein the two-dimensional shape image is a video signal, and is updated at a video rate.

10. (Amended) A light probe microscope according to claim 1; further comprising data collecting means for obtaining the two-dimensional shape image and the two-dimensional light image; wherein the picture signal processing means includes means for digitizing a video signal, calculating a light intensity of the detection region, and transmitting the calculated light intensity to the data collecting means as a digital or analog value.

11. (Amended) A light probe microscope according to claim 1; further comprising data collecting means for obtaining the two-dimensional shape image and the two-dimensional light image; and an external data collecting unit separate from the data collecting means for obtaining a picture synchronized with the shape image in accordance with data containing a trigger signal output by the data collecting means.

12. (Amended) A light probe microscope according to claim 5; wherein the picture signal processing means includes means for obtaining a light image for all wavelength components of the light probe microscope by setting a detection region for each of the wavelength components.

13. (Amended) A light probe microscope according to claim 6; wherein the picture signal processing means includes means for obtaining a light image for all wavelength components of the light probe microscope by setting a detection region for each of the wavelength components.

14. (Amended) A light probe microscope according to claim 7; wherein the picture signal processing means includes means for obtaining a light image for all wavelength components of the light probe microscope by setting a detection region for each of the wavelength components.

15. (Amended) A light probe microscope according to claim 8; wherein the picture signal processing means includes means for obtaining a light image for all wavelength components of the light probe microscope by setting a detection region for each of the wavelength components.

16. (Amended) A light probe microscope according to claim 12; further comprising means for extracting a light spectrum from the light image at a measuring point in a scan region of the sample for plural wavelength components by continuously varying the spectrum in a wavelength axis direction.

17. (Amended) A light probe microscope according to claim 13; further comprising means for extracting a light spectrum from the light image at a measuring point in a scan region of the sample for plural wavelength components by continuously varying the spectrum in a wavelength axis direction.

18. (Amended) A light probe microscope according to claim 14; further comprising means for extracting a light spectrum from the light image at a measuring point in a scan region of the sample for plural wavelength components by continuously varying the spectrum in a wavelength axis direction.

19. (Amended) A light probe microscope according to claim 15; further comprising means for extracting a light spectrum from the light image at a measuring point in a scan region of the sample for plural wavelength components by continuously varying the spectrum in a wavelength axis direction.

20. (Amended) A light probe microscope according to claim 5; further comprising a spectroscope for setting a wavelength of excited light at the probe tip outside an image region of the two-dimensional image sensor so that an S/N ratio to a wavelength other than the excited light is improved.

21. (Amended) A light probe microscope according to claim 6; further comprising a spectroscope for setting a wavelength of excited light at the probe tip outside an image region of the two-dimensional image sensor so that an S/N ratio to a wavelength other than the excited light is improved.

22. (Amended) A light probe microscope according to claim 7; further comprising a spectroscope for setting a wavelength of excited light at the probe tip outside an image region of the two-dimensional image sensor so that an S/N ratio to a wavelength other than the excited light is improved.

23. (Amended) A light probe microscope according to claim 8; further comprising a spectroscope for setting a wavelength of excited light at the probe tip outside an image region of the two-dimensional image sensor so that an S/N ratio to a wavelength other than the excited light is improved.

24. (Amended) A light probe microscope according to claim 1; wherein the converging optical system is arranged to converge one of light that has been transmitted through the sample or reflected by the sample.

25. (Amended) A light probe microscope according to claim 1; wherein the converging optical system is arranged to converge light that has passed through an optical aperture of the probe.

26. (Amended) A light probe microscope according to claim 1; wherein an image at a selected portion of the two-dimensional image sensor is continuously preserved in accordance with a trigger signal.

Kindly add the following new claims 27-32:

27. A light probe microscope comprising: a probe having a tip; means for positioning the probe tip closely to a sample surface and causing two-dimensional scanning movement

between the probe tip and the sample; a light source for emitting light to an area proximate the probe tip and the sample; a two-dimensional image sensor for receiving the light radiated from the sample and producing a two-dimensional image of the sample in accordance therewith; and means for producing a light image based on a signal intensity of light in a detection region of the two-dimensional image.

28. A light probe microscope according to claim 26; further comprising a spectroscope interposed between the sample and the two-dimensional image sensor for selectively obtaining a light signal of specified wavelength.

29. A light probe microscope according to claim 27; further comprising an optical system for converging light emitted by the sample surface in response to the emitted light.

30. A light probe microscope according to claim 29; wherein the optical system comprises a polarizer and a mirror arranged such that different polarization components of the converged light form images in separate positions on the two-dimensional image sensor.

31. A light probe microscope according to claim 29; wherein the optical system comprises a dichroic mirror and another mirror arranged such that different wavelength

components of the converged light form images in separate positions on the two-dimensional image sensor.

32. A light probe microscope according to claim 27; wherein the means for producing the two-dimensional light image includes means for obtaining a signal intensity of a plurality of separate detection regions in the two-dimensional image and producing light images corresponding to the respective detection regions.

ADDITIONAL FEES:

A check in the amount of \$108.00 is enclosed to cover the cost of 6 claims in excess of those already paid for. Should the check prove insufficient for any reason, authorization is hereby given to charge any such deficiency to our Deposit Account No. 01-0268.

IN THE ABSTRACT:

Delete the abstract now of record and insert therefor the new abstract submitted herewith on a separate sheet.

IN THE DRAWINGS:

Submitted herewith are copies of Figs. 1, 3, 9 and 10 of the application drawings on which have been marked in red proposed drawing revisions. Upon approval of the